

ZARDINOPHYLLUM (SCLERACTINIA) FROM THE UPPER TRIASSIC OF THE CENTRAL WESTERN CARPATHIANS (CZECHO-SLOVAKIA)

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Abstract: The paper discusses the first finding of corals of the suborder *Pachythealiina* in the Western Carpathians. It extends the range of the Carnian genus *Zardinophyllum* Montanaro & Gallitelli 1975 known hitherto from the Southern Alps to the area of the Central Carpathians and to the uppermost Triassic. The corals, occurring in limestone beds of the Krížna Nappe, have been found in three significantly distant sites in Slovakia.

Key words: Scleractinia, corals, Late Triassic, Rhaetian, Western Carpathians

Introduction

Fatra Formation sequence has originated in late Rhaetian transgressing shallow sea, rich in benthic life (Fig. 1). These sediments were deposited in the nearshore and adjoining shallow water zones (Michalík & Jendrejáková 1978), formed on ancient inherited elevations (Michalík 1978). Products of three independent biohermal episodes are preserved within the Fatra Formation sequence (Roniewicz & Michalík 1991). Supporting part of biostromal constructions have been formed by little consolidated skeletal sand and debris, consisting of fragments of bivalve-, brachiopod- and gastropod shells, calcareous sponge- and coral colonies. Michalík (1979) has divided the coral fauna of the Fatra Formation into four environmentally dependant groups:

1 – Forms of the outer side of biostromes were evidently adapted to deeper neritic, well aerated moving water environment. The biostromes of *Retiophyllia clathrata*, *R. paraclathrata*, etc., were inhabited by patchy colonies of *Rhaetina gregaria*.

2 – Forms of the biostrome core (*Parathecosmilia sellae*, *Rhaetiastraea tatica*, *Astraomorpha crassisepta*) were only sporadically associated with other organisms.

3 – Forms of the protected neritic zone (*Phacelostyphyllum robustum*, *P. medium*, *Stylophyllum gracile*) were associated with numerous organisms in variegated biostromal communities.

4 – Forms of the biostromal lagoons (*Pinacophyllum lejovae*, *Pamiroseris rectilamellosa*, etc.), scattered in marly organodetrital and gastropod bearing limestones.

The last associations yielded tiny horn-shaped fossils, identical with coralites of *Zardinophyllum*, described by

Montanaro-Gallitelli (1975) or Cuif (1977) from Carnian deposits in Dolomites (Southern Alps). The best preserved findings come from localities Ostrý vrch (loc. 006 in Michalík 1974) by Zliechov and Malá dolina Valley (loc. 056) by Rudnianska Lehota in Strážovské vrchy Mts., Baranie (loc. 332) by Jakub and Sásová (loc. 333) near Banská Bystrica at the slopes of Low Tatra Mts. All the localities belong to the Krížna Nappe. The material, collected by the later author (in 1972–1975) is deposited under numbers SNM Z-20661 – Z-20667 in Natural History Department of the Slovak National Museum in Bratislava.

The contribution presented here has been made within the frame of scientific collaboration between Slovakian and Polish Academies of sciences in the years 1989–1990.

Taxonomical descriptions

Suborder *Pachythealina* Eliášová, 1976
Family *Zardinophyllidae* Montanaro-Gallitelli, 1975
Genus *Zardinophyllum* Montanaro-Gallitelli, 1975

The genus, known also under synonymic name of *Gallitellia* Cuif 1977, contains simple corals of vermicular shapes and small dimensions. As a representative of *Pachythealiina*, *Zardinophyllum* is characterized by a thick wall of a peculiar structure and relatively poorly developed septa. Originally, the wall was composed of radially arranged large fascicles of aragonite fibres (compare Montanaro and Gallitelli 1974, 1975; Cuif 1975, 1977). The original structure of the skeletons described here is preserved in traces only.

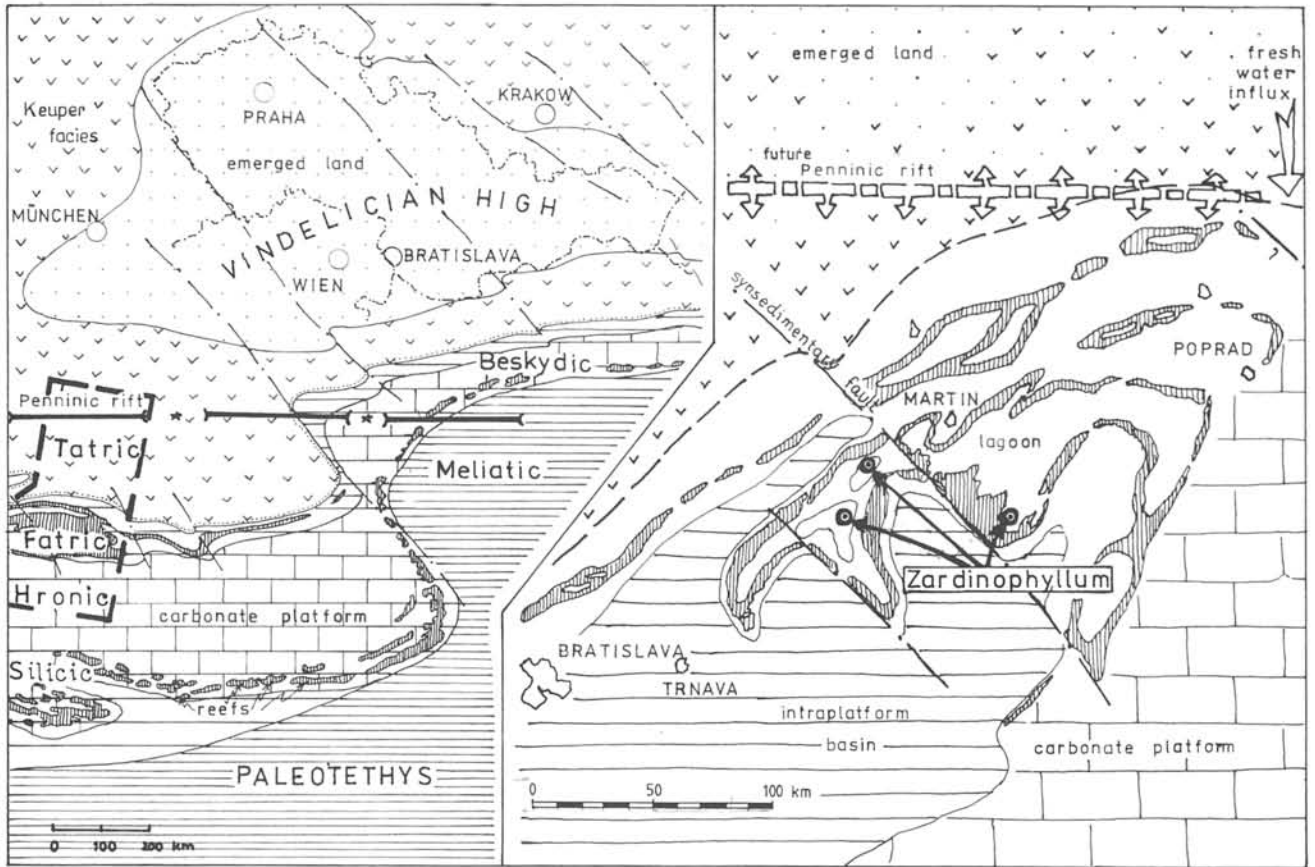


Fig. 1. Paleogeographic sketch showing the location of the Central Western Carpathian segment in the Late Triassic time (left) and the distribution of the principal litho- and biofacies in the Fatra Formation sedimentary area (right, compare also with the polygone denoted in the left figure).

Zardinophyllum sp. A

(Pl. 1: Figs. 1–6; Pl. 2: Figs. 3–5)

Material: Several dozens of specimens in the limestone samples collected on the following sites: Ostrý vrch (006) between Valaská Belá and Zliechov, and Malá dolina Valley at Rudnianska Lehota (056) near Nitrianske Rudno in the Strážovské Vrchy Mountains; Baranie at Jakub (332) and Sásová (333) near Banská Bystrica at the southwestern slopes of the Low Tatra Mts. Fourteen thin sections have been made.

Dimensions in millimeters:

height	more than 10
diameter of corallum	1–2.5
diameter of calice	2–2.5

Description: Corallum strongly elongated, vermicular. Wall thick, with transversally wrinkled surface. Lumen proximally strongly reduced, or completely filled with a recrystallized sclerenchyme, while distally enlarging and filled with a sediment. Calice thin-walled, and distally devoid of septa. Septa developed as short lists or rows of thin spines. Septa seem to be relatively numerous and poorly differentiated into orders. Endotheca lacking.

Original microstructural features preserved in vestiges. In the peripheral portion of the wall, one can observe radially

arranged calcite crystallites. They differ in their shape, size and orderly distribution from the blocky calcite filling up the lumen of the coralla or visible in strongly recrystallized internal portions of the wall (Pl. 2: 4, 5). In the state of preservation of the original wall structure (with recognizable arrangement of vestigial primary skeletal units) the corals resemble pachytheclidiids (*Pachydendron sp.*) occurring in the Norian limestone facies of the Alpine area (Pl. 2: 1, 2).

Remarks: The form considered differs from *Z. zardinii* Montanaro-Gallitelli 1975 in weaker S-1 blades and smaller diameters of corallum (2–6 mm in the latter). This indicates the non-conspicuity of the two forms. However, due to the poor preservational state of the septal apparatus in the specimens examined, the Carpathian form cannot be, as yet characterized by a precise specific diagnosis.

Occurrence in Carpathians: lagoonal facies of the upper Rhaetian Fatra Formation in the Krížna Nappe.

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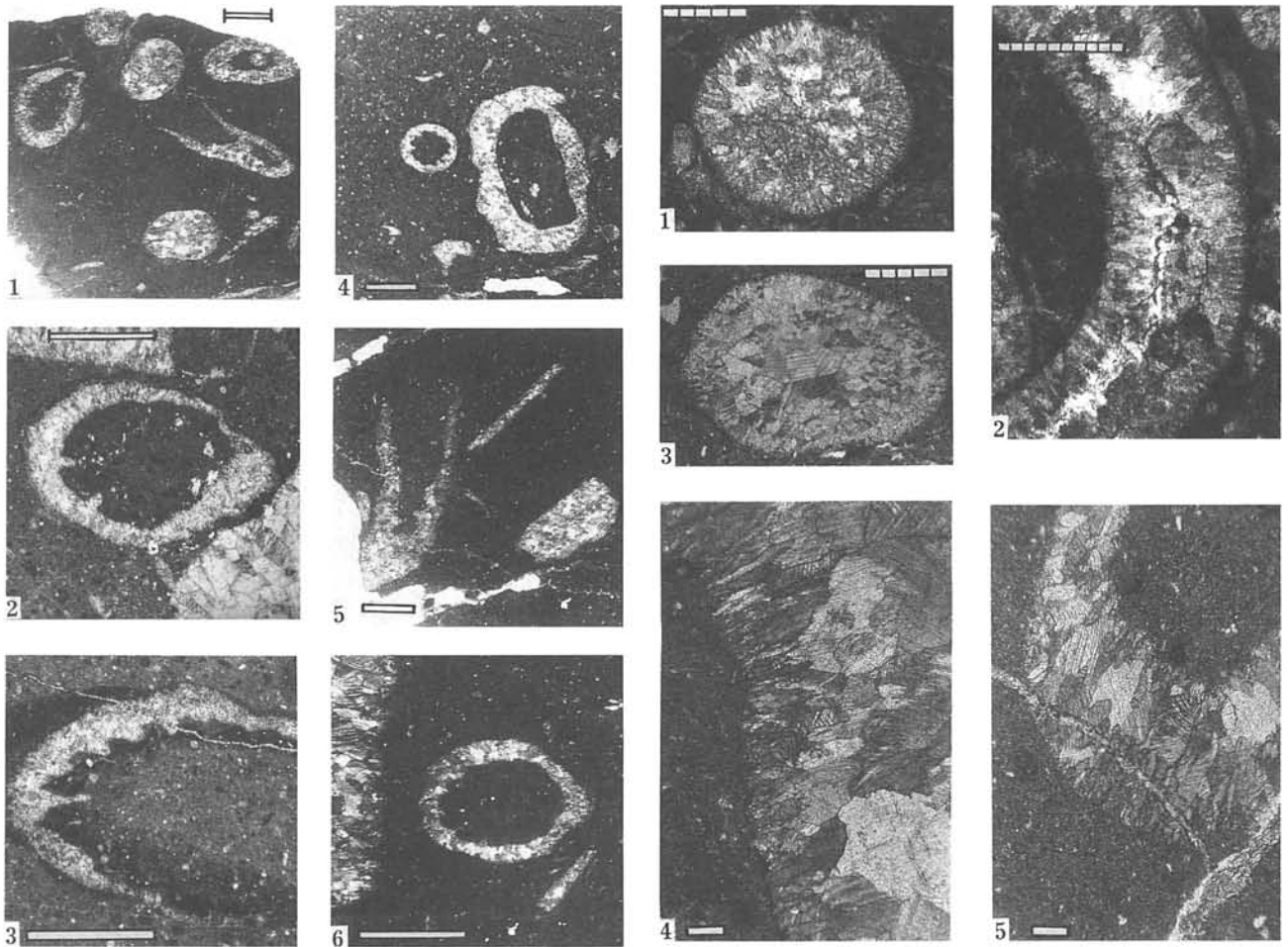


Plate 1. Morphology of *Zardinophyllum* sp. A, Rhaetian Fatra Formation, Western Carpathians, Slovakia.

Fig. 1 – Thin section 13/1, corallites in transverse and longitudinal sections. Fig. 2 – Thin section 13/11, corallite in transverse section with partially preserved thick septa S-1. Fig. 3 – Thin section 13/10, corallite in transverse oblique section. Fig. 4 – Thin section 13/9, transverse sections of small and large corallites. Fig. 5 – Thin section 9/1, corallite in longitudinal section. Fig. 6 – The same thin section, corallite in transverse, slightly oblique section. (Figs. 1–4 from Baranie at Jakub (332), 5–6 from Ostrý vrch (006). Bars = 1 mm.

Plate 2. Vestiges of microstructure in zardinophyllids.

Figs. 1–2 – *Pachyendron* sp. Upper Triassic, Alps. Specimens GBA 1989/01/14 and 1989/0/03, transverse sections: traces of thin fascicles of fibres in the external portion of the wall. Dachstein Limestone, Dachstein Mts. Figs. 3–5 – *Zardinophyllum* sp., Upper Triassic, Western Carpathians (loc. Baranie at Jakub). Fig. 3 – Thin section 13/6, corallite in transverse section showing traces of thin fascicles of fibres in the external portion of the wall. Fig. 4 – Thin section 13/4, transverse section showing traces of recrystallized fascicles of fibres in the wall. Fig. 5 – Thin section 13/8, longitudinal section showing traces of thin fascicles of fibres in the external portion of the wall. Bars = 0.1 mm.

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